

1076212

INSTRUCTIONS

his spreadsheet is designed to record the raw fiber counts for air and dust samples analyzed by TEM

This is version TEM32d

Raw Data Recording

Raw data are to be recorded by the analyst in hard copy using Lab sheet 1 and as many Lab Continuation pages as needed

Data Entry

Data on the hard copy lab sheets are to be entered electronically on data entry sheets 1 and 2

Areas for data entry are highlighted in **YELLOW**

OR are indicated by a PULL-DOWN MENU

Cells that are shaded gray do not require any data input

Cells that are shaded red either require data input or contain an apparent data inconsistency

Do not enter data in any other location!

Avoid the drag and drop method for copying. Enter all values individually

File Save

After entering all data on Data Entry 1 (or any time thereafter), SAVE THE FILE by clicking on the macro button located on data Entry 1 or Data Entry 2.

The file name is generated automatically by concatinating information provided in Data Entry 1, incap EPA Index ID, b) Lab Sample Number, c) Counting Rule, d) Analysis Date, e) Prep method, and roll example, if the EPA number is 2-012343 and the lab iD number is abc-1234, the method is **AHERA**, the analysis date is **03-04-01**, the prep method is **Direct**, and the QA type is **Recount Same**

the file name will be: "2-012345 abc-1234 AHERA 03-04-01 DRS.XLS"

opened:

- --ii you open באסבב and then open the דבואו בטט, the new life will be saved in the same directory as the TEM EDD.
- --if you open the TEM EDD from Explorer, then the file will be saved in you default directory for Excel (usually this is C:\Documents and Settings\My Documents)

TEM - General Counting Rules
Follow established project-specific counting and stopping rules.
Do not count non-asbestos material (NAM) structures.

Both to committee whether a second to the properties of the proper

AIREA/ASTM Counting Rules:

Vaid Structure Types are Fiber (P), Marrix (M), Cluster (C), and Bundle (B).

For Marrice (M), record the dimensions of the proteinsion, not the nature.

For Marrice (M), record the dimension of the proteinsion, not the nature.

For Marrice (M), record the dimension of the proteinsion, not the nature.

For Marrice (M), record the dimension of the proteinsion, not the nature.

For Marrice (M), record the dimension of the proteinsion, not the nature of the natur

DATA ENTRY 1	Description	Notes
File Type	Correction/revision status of the file	Select the appropirate File Type (original, correction 1, correction 2, correction 3. correction 4) from the pull-down list. The filename will be automatically updated to reflect the correction status (i.e., "Cl" suffix will be added to the "correction 1" file It is not necessary to manually change the filename.
aboratory Name	Name of lab performing analysis	Use a standard name for all sheets.
nstrument Voltage (KV)	Instrument used for analysis Voltage used for analysis	
Magnification Grid opening area	Magnification used for analysis Size of grid opening	Enter as a value in units of mm ² . This field should not contain any text.
icale: 1L =	Scale adjustment factor for length	Enter 1.0 if dimensions are expressed as um. Otherwise, enter um per unit screen
Scale: 1D=	Scale adjustment factor for width	length. Enter 1.0 if dimensions are expressed as um. Otherwise, enter um per unit screen width.
Primary filter area	Size of primary effective filter area (EFA)	Enter as a value in units of mm ² . This field should not contain any text.
Secondary filter area	Size of secondary effective filter area (EFA)	Enter as a value in units of mm ² . This field should not contain any text.
Category	Sample type	Select the appropriate category (Field, Replicate, Duplicate, Blank) from the pull-do
		list. Select the appropriate category (Analyzed, Overloaded, Damaged, Missing, Cancelle
Filter Status	Status of the sample filter	from the pull-down list. Enter the EPA Index ID exactly as it appears on the sample (ie: 2-00013). This field
EPA Index ID Sample Type	Unique sample identifier Sample media	should not contain any spaces or a lab QA type suffix. Select the appropriate category (Air, Dust, Dustfall) from the pull-down list.
Air volume (L), dust area (cm2), or dustfall container area (cm2)	Air volume (L), dust area (cm2), or dustfall container area (cm2)	If the sample media is air, enter the air volume in units of L. If the sample media is denter the dust sample area in units of cm ² . If the sample media is dustfall, enter the dustfall container area in units of cm ² . This field should not contain any text.
Date Received Lab Job Number	Date sample was received by lab	Enter as a valid date with the format MM/DD/YY.
Lab Sample Number	Job number assigned to analysis by lab Sample identifier as designated by lab	If the sample is a lab QA Type, DO NOT add the QA suffix to the Lab Sample ID. If the file has been corrected or modified, DO NOT add 'REV" to the Lab Sample II.
Number of grids prepared Prepared by	Number of grids prepared by lab Name of lab preparation personnel	Use the File Type pull-down list to note the revision status. Enter as first initial and last name (J. Smith)
Preparation date	Date sample was prepared	Enter as a valid date with the format MM/DD/YY.
EPA COC Number Analyzed by	EPA chain of custody number Name of analyst	Enter as first initial and last name (J. Smith)
Date Analyzed	Date sample was analyzed by lab	Enter as a valid date with the format MM/DD/YY. Select the appropriate Prep type (Direct, Indirect, Indirect - Ashed) from the pull-do
Prep Loose Material in the Cowl?	Analysis Prep Type Is there loose material or debris in the cowl?	list. If the sample media is air, select either "yes" or "no" from the pull-down list.
	Counting Rules utilized to analyze	Select the appropriate Counting Rule from the pull-down list. If the sample media is
Counting Rules Grid Storage Location	Counting Rules utilized to analyze sample Grid storage location identifier	dust, select either ASTM-AHERA or ISO. If the sample media is air, select either AHERA or ISO.
F-factor Calculation: Indirect Prep inputs:		For Direct prep, f-factor is set to equal 1 and specific f-factor calculations are not required.
Fraction of primary filter used		Enter the fraction as a value. This field should not contain any text.
First resuspension volume or rinsate volume (mL)		Enter as a value in units of mL. This field should not contain any text.
Volume applied to secondary filter (mL) or used for serial dilution Inputs for Serial Dilutions:		Enter as a value in units of mL. This field should not contain any text.
Second resuspension volume (mL)		Enter as a value in units of mL. This field should not contain any text.
Volume applied to secondary filter (mL) or used for serial dilution		Enter as a value in units of mL. This field should not contain any text.
Third resuspension volume (mL) Volume applied to secondary filter		Enter as a value in units of mL. This field should not contain any text.
(mL) or used for serial dilution	ter: (Note: only complete this cell if the S	Enter as a value in units of ml This field should not contain any text. ECONDARY filter was ashed. Leave blank if the primary filter was ashed.
Fraction of secondary filter used		Enter the fraction as a value. This field should not contain any text.
QA Type	Lab quality control code	Select the appropriate laboratory QA type (Not QA, Recount Same, Recount Differe Repreparation, Verified Analysis, Reconciliation, Lab Blank, Interlab) from the pull down list.
Comments Recording Rules:	Sample/Analysis comments	
Minimum Aspect Ratio	Minimum aspect ratio of structures that	Select the appropriate minimum aspect ratio (none, ≥ 3:1, ≥ 5:1) from the pull-dow
	are to be recorded Minimum length of structures that are to	list.
Minimum Length Minimum Width	be recorded Minimum width of structures that are to be recorded	Enter as a value in units of um. If no minimum length is specified, enter 0.00. Enter as a value in units of um. If no minimum length is specified, enter 0.00.
Stopping Rules (stop if any one of the fol		
Target Sensitivity	Target sensitivity	Enter as a value in units of s/cc for air or s/cm ² for dust or dustfall. This field should not contain any text. If no target sensitivity is required, leave this field blank. Enter as a value. This field should not contain any text. If no maximum # of GOs h
Maximum # of GOs	Maximum # of GOs	been established, leave this field blank.
Maximum # of Structures DATA ENTRY 2	Target # of structures	Enter as a value. This field should not contain any text. If no target # of structures required, leave this field blank.
Data Entry by	Name of data enty personnel	Enter as first initial and last name (J. Smith)
Data Entry Date QA by	Date results were entered Name of QA personnel	Enter as a valid date with the format MM/DD/YY. Enter as first initial and last name (J. Smith)
QA Date	Date results were QA'ed	Enter as a valid date with the format MM/DD/YY. Enter the appropriate grid in the first row only. If there are multiple rows associated
Grid	Grid identifier	Enter the appropriate grid in the first row only. If there are multiple rows associated with the grid, it is not necessary to repeat the grid in every row.
Grid Opening	Grid opening location identifier	Enter the appropriate grid opening in the first row only. If there are multiple rows associated with the grid opening, it is not necessary to repeat the grid opening in the row. Indicate grid opening that DO NOT count crystolic with an *** following the grid opening name (eg. A-4*). Indicate grid opening that COUNTED ONLY A FRACTION OF THE GO for crystolic with an **If following the grid opening name (eg. A-4*). Indicate grid opening that COUNTED ONLY A statement of the grid opening name (eg. A-4*). Indicate grid opening that COUNTED ONLY A statement of the grid opening name (eg. A-4*). Indicate grid opening that COUNTED ONLY A statement of the grid opening name (eg. A-4*). Indicate grid opening name (eg. A-4*)
	-	East the appropriate gait opening in the first row only. If there are multiple rows associated with the price queeing it is not access up to repeat the price point in the converse because the price point of the price point
	Grid opening location identifier Structure Type code	East the appropriate grid opining in the first row only. If there are multiple rows associated with the grid opining it is not access to repeat the grid opining in our consecution with an "of following the corner. Include grid opining man (e.g. A+f). Include and posening that COUNTED ONLY A FRACTION OF THE GO for cynotile with an "To following the grid opining man (e.g. A+f). Include and posening that COUNTED ONLY A FRACTION OF THE GO for cynotile with an "To following the grid opining man to the fraction of the total COUNTED ONLY A format of the GO counted in the appropriate column (Fract. GO Chrys.). Hear the survey to you collect for chryothesis of the GO counted in the appropriate column (Fract. GO Chrys.). Hear the survey to you collect. For AIEERA, valid structure types are Fiber (F). Matrix (M). Cluster (C and Bundle (B).)
Structure Type	-	later the appropriate gait opening in the first town only. If there are multiple rows associated with the give opening it is not access to respent the give opening of the DO NOT count crystolic with an ""following the opening manner of the opening the COUNTY DO NOT A TRACTION OF THE GOS to crystolic with an ""following the good opening that COUNTY DO NOT A TRACTION OF THE GOS to crystolic with an ""following the good opening that the following the good opening that the following the good opening the county of the property of the following the good opening the county of the following the good opening the county of the following the good opening
Structure Type Primary	Structure Type code	Earch the appropriate grid opening in the first row only. If there are multiple rows associated with the price opening is not not excess to respect the give opening in the DO NOT count cryotist with an "fellowing the opening man to DO NOT count cryotist with an "fellowing the grid opening man (e.g. A+f). Include any desputing that COUNTED ONLY A FRACTION OF THE GO for cytoside with an "fellowing the grid opening man (e.g. A+f). Include any fellowing the counter for chryotist, our mast est for facts of the total COUNTED ONLY A fellowing the grid opening man to the fraction of the total COUNTED on counted for chryotist, our mast est feature the structure type codes. For ASIGN extensive the enabytical method for wind structure type codes. For ASIGN extensive types are Fiber (f). Matrix (M). Cutter COUNTED ONLY (M) and Binside (f). For EO, center a non-zero sequential mande for my singap primary structure, it is no encounty to report the primary number in every now. This field is not useful AIREA or ASTM.
Structure Type Primary Fotal ength	Structure Type code Primary Structure identifier Total Structure identifier Structure length	later the appropriate grid opening is the first row only. If there are multiple rows associated with the grid opening is not accessable receptor to general processors to repeat the grid opening of the DO NOT count cryotide with an "" following the opening of position grid opening man (e.g. Art). Indicate grid opening that COUNTED ONLY A FRACTION OF THE GO for cryotide with an "" following the grid opening man (e.g. Art). Indicate grid opening that COUNTED ONLY A FRACTION OF THE GO for cryotide with an "" following the grid opening man of the fraction of the GO counted in the appropriate column (Fract. CO Chrys). Bear the structure type code. For SO, we are analyzing method for well structure type code. For Allex A, and structure types are Fiber (Fr. Morris SO). Close CC FO SO, which is the contractive type of t
Structure Type Primary Fotal Georgh	Structure Type code Primary Structure identifier Total Structure identifier Structure length Structure width defenfication	later the appropriate grid opening is the first row only. If there are multiple rows associated with the pid opening is not accessably to repeat the gly opening in cut of course typosited with an ""following the opening of the DO NOT count cryotide with an ""following the opening of position position of position position position positions of the property of the position of the property of the position of the total Country of the position of the CO Country of the position of the CO Country of the property of the position of the CO Country of the property of the position of the CO Country of the property of the position of the CO Country of the property of the position of the CO Country of the property of the
Structure Type Primmy Fotal Gength Width desentration Mineral Class	Structure Type code Primary Structure identifier Total Structure identifier Structure length Structure width dentification Description of the structure mineral class type	later the appropriate grid opening is not first row only. If there are multiple rows associated with the pideopening is not not excess we respect the give opening from the DNOT count cryotide with an "following the query office opening man DNOT count cryotide with an "following the grid opening man (e.g. A+f). Include any flowning that even the propriate of the pideopening that COUNTED ONLY A FRACTION OF THE GO for cryotide with an "following the grid opening man (e.g. A+f). Include any flown on counted for chryotide, you must enhe fraction of the GO counted in the appropriate column (Fast. GO Chrys.). Earn the surceuse types codes. For ANDERA, valued structure types are free the mylicate method and Binade (ft). and Binade (ft). for the counter of the contractive types are free free pideopening varieties in the first two only. If there are multile rows associated with the primary structure, it is first two only. If there are multile rows associated with the primary structure, it is designed to the contractive types codes are structure. "See a provide first increasing above productive and an anon-zero number to countable structure." "See a provide insurance and non-zero number to countable structure." "See a provide insurance and non-zero number to countable structure." "See a provide insurance and non-zero number to countable structure." "See a provide insurance and non-zero number to countable structure." "See a provide insurance and non-zero number to countable and the provide structure and a non-zero number to countable and the provide structure and a non-zero number to countable and the provide structure and a non-zero number to countable and the provide structure and non-zero number to countable and the provide structure and non-zero number to countable and the provide structure and non-zero number to countable and the provide structure and non-zero number to countable and the provide structure and non-zero number to countable and the provide structure and non-zero number to countable and the provide str
Structure Type Primary Fotal	Structure Type code Primary Structure identifier Total Structure identifier Structure length Structure width detentification Description of the structure mineral class type Structure comments Structure comments	later the appropriate grid opening in the first row only. If there are multiple rows associated with the pid opening in two first cascoust reported to grid opening in one consequence of the pid opening and opening and the pid opening and opening opening the COLVETTO ONLY A FRACTION OF THE GOD one reposited with an "" following the grid opening does not consider the relation of the total COLVETTO ONLY A FRACTION OF THE GOD one reposite with an "" following the grid opening man of the fraction of the total COLVETTO ONLY A FRACTION OF THE GOD one reposite without the fraction of the GO control in the appropriate colloss (First. GO Chrys). Earner the structure types code. For JOS, see analysical method for would structure types code. For AIREA, well structure types are Fiber (F), Matrix (M), Closter C, FO SQ, stear a none consequent annual for any unique primary structure is the first row only. If there are multile rows associated with the primary structure, it is excessary to report the primary number in every row. This field is not used for AIREA or ASTM. Assigns 3" to say none-contable or excluded structure and a non-zero number to its field for ING and AIREA/ASTM. State all controls are all the controls of the control of the cont
Grid Opening Structure Type Printary Fotal Length Width Moderat Class Comments Stock Comments	Structure Type code Primary Structure identifier Total Structure identifier Structure length Structure with Identification Description of the structure mineral class type Structure comments	East the appropriate grid opening in the first row only. If these are multiple rows accurated with the grid opening is not not excess by respect the grid opening in one concession because the grid opening in the ONOT count exposite with an "" following the grid opening man (e.g. A+1). Indicate grid opening that COUNTED ONLY A FRACTION OF THE GO for exposite with an "" following the grid opening man (e.g. A+1). Indicate grid opening that COUNTED ONLY A FRACTION OF THE GO for exposite with an "" following the grid opening man the fraction of the total COUNTED ONLY A FRACTION OF THE GO for exposite column (Fract. GO Clays). Here the structure species of the fraction of the CO counted in the appropriate column (Fract. GO Clays). Here the structure species color species of the grid opening with the properties of the color of the GO Counted on the appropriate column (Fract. GO Clays). For SO, center a non-zero sequential number for any unique primary structure is the first own only. If there are multile rows ascended with the primary structure, it is no MIERA or ASTM. ANGER ON ASTM. ANGER

Enter Project Name Here:	LIBBY

LIBBY TEM Asbestos Structure Count

Laboratory name:	RESI
Instrument	JEOL 100 CX
Voltage (KV)	100 KV
Magnification	20,000
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	201
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.45

3
0.22

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	
Counting rules (ISO, AHERA, ASTM)	
Grid storage location	
Archive filter(s) storage location	
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

ļ	Recording Rules:								
ı	Minimum Aspect Ratio (circle one):								
	none	≥ 3:1	≥ 5:1						
ı	Minimum Length (um):								
ı	Minimum Width (um):								

Stopping Rules:	
Target Sensitivity:	
Max # of GOs:	
Target # of Structures:	

F-factor Calculation:

Indirect Prep Inputs

man cot i ic	p inputo
	Fraction of primary filter used for
	indirect prep or ashing
	[For dust and dustfall, enter 1.0]
	First resuspension volume or rinsat volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	sions Mineral C	eral Class	see belo	w)	Sketch/ Comments	1 = ye	s, blank	= no	Fract. GO	
did	and Opening	Type	Primary	Total	Length	Width	identification	LA	OA	C	NAM	Sketch/ Comments	Sketch	Photo	EDS	Chrys.

age	of	

LIBBY TEM Asbestos Structure Count

LAB NAME	EPA SAMPLE NO.		QA TYPE	LAB JOB NUMBER	
LAB SAMPLE NO.	SAMPLE TYPE			GRID STORAGE LOC.	

LAD SAIVII LE INO.		SAIVII LL						drib storiade eoo.							
Grid	Structure	Structure No. of Structures Dimen		ture No. of Structures Dimensions Identification Mineral Class						1		1 = yes, blank = no			Fract. GO
Opening	Туре	Primary	Total	Length	Width	idonanoanon	LA	OA	С	NAM	Sketch/Comments	Sketch	Photo	EDS	Chrys.
		Grid Structure	Grid Structure No. of Str	Grid Structure No. of Structures Opening Type	Grid Structure No. of Structures Dime	Grid Structure No. of Structures Dimensions Opening Type	Grid Structure No. of Structures Dimensions Identification	Grid Structure No. of Structures Dimensions Identification	Grid Structure No. of Structures Dimensions Identification Minera	Grid Structure No. of Structures Dimensions Identification Mineral Class	Grid Structure No. of Structures Dimensions Identification Mineral Class	Grid Structure No. of Structures Dimensions Identification Mineral Class	Grid Structure No. of Structures Dimensions Identification Mineral Class 1 = years of the structure of the s	Grid Structure No. of Structures Dimensions Identification Mineral Class 1 = yes, blank	Grid Structure No. of Structures Dimensions Identification Mineral Class 1 = yes, blank = no

STRUCTURE LOCATIONS WITHIN GRID OPENING

Lab Name:	Lab Job Number:	
Index ID:	Lab Sample ID:	
Lab QC Type (circle one):	Reprep for interlab Interlab	
Grid:	Grid Opening:	
upper left corner		
CILOU		
traverse direction		
ITAN		
↓		
Comments:		

FILE TYPE: Original

Recording Rules:

Minimum Width (um)

Stopping Rules:

≥ 3:1 ▼ Minimum Aspect Ratio 0.00100 Target Sensitivity d to reach Minimum Length (um) vity

107	GOs required to read target sensitivity
100	Maximum # of GOs

50	Maximum # of Structure

Estimated # of GOs

F-factor Calculation:

0.50

0.00

TEM Asbestos Structure Count

LIBBY

Laboratory name:	RESI			
Instrument	JEOL 100 C X			
Voltage (KV)	100KV			
Magnification	20,000			
Grid opening area (mm2)	0.0110			
Scale: 1L =	0.280			
Scale: 1D =	0.056			
Primary filter area (mm2)	385.0			
Secondary Filter Area (mm2)	346.0			
Category	Field			
Filter Status	Analyzed			

EPA Sample Number:	FC-00003			
Sample Type	Air			
Air volume (L), dust sample area (cm2), or dustfall container area (cm2)	118	0		
Date received by lab	8/27/2	007		
Lab Job Number:	143576			
Lab Sample Number:	143576-176054			
Number of grids prepared	3			
Prepared by	ND/KS	/CL		
Preparation date	9/20/2	007		
EPA COC Number	L12730			

Analyzed by	A. Heitger				
Analysis date	10/18/2007				
Prep	Indirect - Ashed				
If sample type = air, is there loose material or debris in the cowl?	Yes				
Counting rules	ISO (Air or Dust)				
Grid storage location	143576				
Archive filter(s) storage location	143576				
Enter the appropriate data in the cells to calculate the F-factor >>>>	o the right to				
F- factor	0.25				
QA Type	Not QA ▼				

Indirect Prep Inputs

1	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
100	First resuspension volume or rinsate volume (mL)
25	Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

inputo ioi	Coriai Bilationo
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for seria dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

0.25 F-factor

COMMENTS		

LIBBY TEM Asbestos Structure Count

EPA SAMPLE ID: FC-00003 Sample Type Air Prep Indirect - Ashed Count Rule 10312 QA Type Not QA

ERROR - Check Values

Data Entry by:

Data Entry date:

S. Gardalen

QA by:

QA date:

10/29/2007

QA date:

Crid		uctures Ro Structure Type	No. of S	omplete cu tructures			T					T T				
	Opening			tructures	Dimono											
		Type					Identification		Mineral Cl				1 = yes, blank = no			Fract. GO
Α	E2-6		Primary	Total	Length	Width		LA	OA	С	NAM	Comments	Sketch	Photo	EDS	Chrys.
		F	1	1	70	6	ADX	1				WRTA, NaK, XGB (Leng	1	1	1	
		F	2	2	9	4	ADX	1				WRTA, NaK	1	1	1	
		В	3	3	13	4	ADX	1				WRTA, NaK	1	1	1	
		F	4	4	5	5	ADX	1				WRTA, NaK	1	1	1	
		F	5	5	22	10	ADX	1				WRTA, NaK	1	1	1	
		MD10	6													
		MF		6	9	4	ADX	1				AT, XX	1	1		
		MD10	7													
		MF		7	5	2	ADX	1				WRTA, NaK	1			
		MD10	8													
		MB		8	61	28	ADX	1				WRTA, NaK	1			
		F	9	9	26	16	ADX	1				WRTA, NaK	1			
		В	10	10	4	2	ADX	1				WRTA, NaK	1			
		В	11	11	14	22	ADX	1				WRTA, NaK	1			
		F	12	12	7.5	5	ADX	1				WRTA, NaK	1			
		F	13	13	4	5	ADX	1				WRTA, NaK	1			
		MD10	14													
		MB		14	38	15	ADX	1				WRTA, NaK	1			
		В	15	15	12	10	ADX	1				WRTA, NaK	1			
		MD10	16													
		MB		16	19	5	ADX	1				WRTA, NaK	1			
		MD11	17													
		MB		17	46	17	ADX	1				WRTA, NaK	1			
		MD10	18													
		MB		18	3	5	ADX	1				WRTA, NaK	1			
		F	19	19	12	3	ADX	1				WRTA, NaK	1	1		
		F	20	20	22	3	ADX	1				WRTA, NaK	1	1		
		MD10	21													
		MF		21	8	4	ADX	1				WRTA, NaK	1			
		В	22	22	6	7	ADX	1				WRTA, NaK	1			
		В	23	23	11	5	ADX	1				WRTA, NaK	1			
	C3-3	MD11	24													
		MF		24	97	5	ADX	1				WRTA, NaK	1			
		F	25	25	19	2	ADX	1				WRTA, NaK	1			
		В	26	26	74	8	ADX	1				WRTA, NaK, XGB (lengtl	1			

		F	27	27	56	6	ADX	1			WRTA, NaK	1			
		MD11	28		00	<u> </u>	ABA	·			Witin, itali	<u> </u>			
		MF		28	18	6	ADX	1			WRTA, NaK	1	1		
		F	29	29	3	3	ADX		1		UN, Non-Regulated			1	
		В	30	30	5	7	ADX	1			WRTA, NaK	1			
		MD11	31												
		MB		31	92	9	ADX	1			WRTA, NaK	1			
		F	0	0	7	18	ADX	1			WRTA, NaK	1			
		MD11	32												
		MF		32	26	4	ADX	1			WRTA, NaK	1			
		MD11	0												
		MF		0	76	5	ADX	1			AT, XX, XGB (wrong side	1			
		В	33	33	11	12	ADX	1			WRTA, NaK	1			
		F	34	34	14	14	ADX	1			WRTA, NaK	1			
		MD11	35	0.5	00	C	ADV				M/DTA Nel/				
		MB	36	35	23	8	ADX	1			WRTA, NaK	1			
		MD10 MF	36	36	12	3	ADX	1			WRTA, NaK	1			
		MD11	37	36	12	J	ADA	ı			Whia, Nan	<u> </u>			
		MF	31	37	22	9	ADX	1			WRTA, NaK	1			
		MD10	38	37	22	9	ADA	1			WITTA, Nat				
		MF	- 00	38	9	5	ADX	1			WRTA, NaK	1			
		MD10	39	- 55			ABA				TTTTT, TUIT	<u> </u>			
		MF		39	7	4	ADX	1			WRTA, NaK	1			
		F	40	40	9	7	ADX	1			WRTA, NaK	1			
		MD10	41												
		MB		41	17	13	ADX	1			WRTA, NaX	1			
		MD11	42												
		MB		42	31	6	ADX	1			WRTA, NaK	1			
		MD10	43												
		MF		43	13	5	ADX	1			WRTA, Nak	1			
		MD11	44												
		MF	4-	44	18	4	ADX	1			WRTA, NaK	1			
		B	45	45	6	5	ADX	1			WRTA, NaK	1			
		MD10 MB	46	46	1.4	E	ADV	4			WRTA, NaK	1			
В	E4-4	В	47	46	14 13	5 7	ADX ADX	1			WRTA, NaK WRTA, NaK	1			
В	L4-4	В	48	47	9	5	ADX	1			WRTA, NaK	1			
		F	49	49	10	3	ADX	1			WRTA, NaK	1			
		В	50	50	22	8	ADX	1			WRTA, NaK	1			
		F	51	51	71	18	ADX	1			WRTA, NaK	1			
		MD11	52								,				
		MB		52	72	9	ADX	1			WRTA, NaK	1			
		MD10	53												
		MF		53	14	2	ADX	1			WRTA, NaK	1			
		MD11	54												
		MB		54	56	44	ADX	1			WRTA, NaK	1			

							1					
	F	55	55	3	5	ADX	1		WRTA, NaK	1		
	F	56	56	3.5	4	ADX	1		WRTA, NaK	1		
	В	57	57	40	24	ADX	1		WRTA, NaK	1		
	F	58	58	12	4	ADX	1		WRTA, NaK	1		
	F	59	59	25	6	ADX	1		WRTA, NaK	1		
	F	60	60	7	2	ADX	1		WRTA, NaK	1		
	F	61	61	23	8	ADX	1		WRTA, NaK	1		
	F	62	62	3.5	3	ADX	1		WRTA, NaK	1		
	F	63	63	3	4	ADX	1		WRTA, NaK	1		
	В	64	64	9	5	ADX	1		WRTA, NaK	1		
	MD32	65										
	MF		65	224	11	ADX	1		WRTA, NaK	1		
	MB		66	89	14	ADX	1		WRTA, NaK	1		
	MF		67	9	6	ADX	1		AT, XX	1		
	F	66	68	4	5	ADX	1		WRTA, NaX	1		
	F	67	69	3.5	4	ADX	1		WRTA, NaK	1		
	F	68	70	4	2	ADX	1		WRTA, NaK	1		
	MD11	69										
	MF		71	50	12	ADX	1		WRTA, NaK	1		
	MD10	0										
	MF		0	7.5	2	ADX	1		WRTA, NaK	1		
	F	70	72	3	2	ADX	1		WRTA, NaK	1		
	MD10	71										
	MF		73	6	5	ADX	1		WRTA, NaK	1		

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FC-00003 FC-00003	index	Grid	Grid Opening	Structure Type	Primary	Total		w	AB	Class	Identification	Sketch	Photo	EDG	Comment	GO
	2	Â	534 534	£	1	1	19.6 2.5	63	59-3 11-2	LA LA	ADX ADX	-	-	-	WRTA, NW, XGB (Lei WRTA, NW,	
C-00003	- 2	â	234 234	-	- 2	4	14	63	163 5.0	£	200	-	-	-	WRIA NW	
C-00002	1	Â	524	MD10	+	•	62	04	110		AUX		1	1	WKIA NIK	
00000	4	٨	221	M010	,		25	63	112	5	AUX	1	1		AU . XX	
C-00000	10	Â	524	MC10 MC10 MC10 MC10	٠		171	4.5	10.0	5	100	ŀ	Н	Н	AUTO NAME	
C-00002 C-00002	12	Â	23 23 23 23 23	-	10	10	7.3	0.9	8.1	IA IA	ACK ACK	-			WRIA Nak	
C-60002	16	٨	534	9.	11	11	29	12	32	LA.	ADX ADX	-			WRIA Nak	
C-00002 C-00002	16	A	524 524	MD10	19	12	1.1		40	LA.	ADX	,	I	I	WRITA NIK	
C-00002 C-00002	19	A	524 524	100	15	14	10.6	0.8	127	LA LA	ADX ADX	-	I	I	WRITA NIK	
C-00003	20 21	Â	634 634	MD10 MG	16	16	53	63	19.0	LA	ADX	1			WRIA NW	
-00003	22	4	224	1 10 10	17	17	12.9	10	19.5	À	ADX		ı	ı	WRTA NIK	
00000	24	â	234 234	MD10 MG	19	16	0.8	63	3.0	LA.	ADX	1			WRTA NIK	
-0000	27	â	524	-	20	20	62	62	262	i A	ADX	-	-		WRIA NW	
00000	25	٨	221	16	21	21	22	62	100	iA.	ADX	-			WRIA Nak	
C-00000	21	Â	524 524	9	22	22	17 21	0.4 0.3	43 110	S.A	ÃÚ.	Н	Н	Н	WRIA NW	
C-00003	22	À	333	4	8	24	27.2	63	97.6 47.5	A	ADX ADX	-	Н	Н	WRIA NW	
C-00009	26	Â	C9-3	8	26 27	26 27	15.7	0.4	463	LA LA	ACK ACK	-			WRITA NaK, XGB feet WRITA NaK	
C-00003	27	Ŕ	333	MD11	28	28	50	63	150	LA.	ADX			l	WRTA NaK	
C-00003	60	â	32	MD11	20	2 30	14	0.4	26	UA.	ADX			-	WRIA Nak	
-00003	42	4	C33	MG.	4	31	25.8	65	51.1	A	ADX ADX	-	Н	Н	WRIA NW	
-00000	#	À	633	MD11	20	32	73	62	225	iA.	ADX	-	I	I	WRIA NIK	
00000	47	Â	C92	MD11	٠		21.3	63	76.0	LA	ADX	1			AT, XX, XXX (wrong si	
-00003	49	٨	C2-2	£	29 24	29 24	21	0.8	50 50	IA IA	ADX ADX	-			WRITA NW.	
00003	51	Â	333	MG	1	25	64	0.4	14.4	LA.	ADX	1			WRTA NaK	
-00003	53 54	À	C22	1011 1011 1011 1011 1011 1011	27	26	2.4	0.3	20.0	LA.	ADX	,			WRTA NeK	Е
-00003	55 54	Â	333	MO10	-	27	62	6.5	19.3	LA	ADX	1			WRTA, NW	
C-00003	57 54	À	633 633	MD10	39	26	25	63	9.0	LA.	ACK	+	Ë	Ë	WRTA NIK	Ē
C-00000	60	Â	C9-3	E MO	60	40	25	0.4	44	iA.	ADX	+	H	H	WRIA NAK	H
C-00000	82	Â	83	160 160	41 40	41	4.8	6.7	4.5	LA.	ADX	1			WRTA, NoX	H
00000	64	Á	C2-2 C2-2	MOTO	-	42	67	63	254	LA .	ADX	_			WRTA NaK	E
0.00000	66	À	C9-3	165 16011	44	42	24	6.3	19.0	LA	ADX	Ξ	Ξ	Ξ	WRIA NIK	E
-0000	- 4	4	633 533	MF JA	-6	46	12	63	22.5 6.0	LA LA	ACK ACK	H	Ε	Ε	WRTA NaK	E
C-00003	70 71	Â	C93	MG	- m	46	39	6.3	14.0	LA.	ADX 200	-			WRTA NaK	=
C-00000	72 72	9 0	544 544	ě	47 49	46	25 25	0.4 0.3	93 90 167	IĀ	ACK ACK	÷	H	H	WRIA NW	H
C-00003	2	aa	211	4	50	33	62	0.4	19.8	93	ADX ADX	+	Н	Н	WRIA NIK	
C-00000	77 78	9 9	244 244 244	MOTO	- 50	52	20.2	0.5	402	LA	ADX	Ė			WRTA NW	E
C-00002	29	aa	11	MD10 ME	3	3	28	61	354	3	ADX				WRTA NIK	ı
C-00003	81	a a	544 544	100	54	54	15.7	25	64	3	ADX	-	Н	Н	WETA NW	
C-00003	94	aac	544	÷	34	54	10	62	44	Ä	ADX	-			WETA NIK	
-00000	86	aa	511		33	38	24	62	150	93	ASX	Н	Н	Н	WETA NIK	
C-00003	20	g g	E44	-	60 61	60 91	20 64	0.1 0.4	17.5	LA LA	ADX ADX	-			WRTA NIK WRTA NIK	
-00000 -00000	95	aa	11	4	99	99	28	23	51	55	ASS.	÷			WRIA NW WRIA NW	
C-00003	90	aac	504 504 504	MCGG	65	- 64	25	63	100		AUX.	1			WKIA NW	
C-00003	2	aa		1600 160 161		89	24.9	63	21.8	iA iA	ADX ADX	-	Н	Н	WRIA NW	
C-00002 C-00002	9	aa	544 544 544 544	-	66	4	1.1	333	40	555	ADX ADX	-	Н	Н	WRIA NIX	
C-00003 C-00003	99 100	aa	33	MD11	33	8	2	ő	100	5	ě	1			WRTA NW	ı
C-00003	101	300	544	M010	٠	7	54.0	67	201		AUX.	+			WKIA NW	
C-000000	104	3 44	244	MOU.	76 21	å	68	0.1 0.1	7.5	ĽΑ	200	-	Н	Н	WRIA NW	
C-00009	106	è	544	16	Ï	72	12	63	60	LA.	ADX	-	Н	Н	WRTA NW	
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FC-00003_143576-176054_ISO_10-18-07_IA.xls Version 32d

LIBBY

TEM Asbestos Structure Count -- Not AHERA

SAMPLE ID

Status Analyzed **EPA Sample Number** FC-00003 QA Sample Type Not QA Lab Sample Number 143576-176054 Sample Type Air Category Field Indirect - Ashed Prep Counting rules 10312

Recording Rules:

Min. AR	Min length (um)	Min width (um)
≥ 3:1	0.5	0

TOTAL COUNTS

Total Structures	Not AHERA
Total Asbestos structures	Not AHERA
Total NAM	Not AHERA
Total Not AHERA structures	Not AHERA
Total Non-Not AHERA asbestos structures	Not AHERA

PARAMETERS

Number of Grid Openings (amphibole)	3
Number of Grid Openings (chrysotile)	3
Area of grid opening (mm2)	0.011
F Factor	2.50E-01
Effective primary filter area (mm2)	385.0
Effective secondary filter area (mm2)	346.0
Volume (L) or Sample Area (cm2)	1180
Area counted (mm2) for LA/OA	0.033
Area counted (mm2) for C	0.033

Stopping Rules:

Target S	Max GOs	Max N
0.001	107	50

COUNTS (based on countable Not AHERA structures only)

	LA	OA	С	Total
Not AHERA Structures (< 5 um)	43	1	0	44
Not AHERA Structures (>= 5 um)	29	0	0	29

AIR CONCENTRATION (s/cc)

	LA	OA	С	Total	
Loading on primary filter (s/mm2)	7.8E+03	1.1E+02	<1.1E+02	X HETH3	(if Total = ND, DL is based on LA)
Air Conc (s/cc)	2.6E+00	3.6E-02	<3.6E-02	フトトエロロ	(if Total = ND, DL is based on LA)

DETECTION LIMITS

DETECTION EMMITO									
	LA/OA	С							
Loading on primary filter (s/mm2)	1.1E+02	1.1E+02							
Sensitivity (s/cc)	3.6E-02	3.6E-02							

^{****}DO NOT USE AHERA UPLOAD SHEET****

Note: Currently, the spreadsheet will incorrectly exclude one particular class of matrix structure from the AHERA binned results summary -- a matrix for which a protruding bundle has an aspect ratio less than 5:1, but the underlying fibrils meet the aspect ratio requirement. This is a limitation of the TEM spreadsheet. If this type of structure is encoutered, the analyst should note this issue in the analysis comments.

Mineral Class	S<5u	S>5u	Q_ASBL	ASBL	Q_ASBC	ASBC

Sensitivity

LIBBY

TEM Asbestos Structure Count -- ISO 10312

SAMPLE ID

Status Analyzed
EPA Sample Number FC-00003
QA Type Not QA
Lab Sample Number 143576-176054

Sample Type Air Category Field

Prep Indirect - Ashed

Counting Rules 10312

PARAMETERS

Effective filter area 346.0 mm2
Indirect factor 2.50E-01
Number of Grid Openings (amphibole) 3
Number of Grid Openings (chrysotile) 3
Grid opening area 0.0110 mm2

Volume (L) or Area (cm2)

Sensitivity (amphibole)

Sensitivity (chrysotile)

1180 L

3.55E-02 s/cc

Sensitivity (chrysotile)

3.55E-02 s/cc

Recording	Min. AR	Min length (um)	Min width (um)
Rules:	≥ 3:1	0.5	0

Stopping Target 0.00

Target S	Max GOs	Max N
0.001	100	50

COUNTS (based on countable structures only)

Bin	LA	OA	С	PCME(all)	PCME(asb)
а	11	0	0		
b	0	0	0		
С	17	0	0		
d	29	1	0		
е	11	0	0		
f	4	0	0		
Total	72	1	0	25	25

Check OK OK OK

Grand total 73 OK

CONCENTRATION (s/cc)

	- \ /				
Bin	LA	OA	С	PCME(all)	PCME(asb)
а	3.91E-01	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
b	<dl< td=""><td><dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<></td></dl<>	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
С	6.04E-01	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
d	1.03E+00	3.55E-02	<dl< td=""><td></td><td></td></dl<>		
е	3.91E-01	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
f	1.42E-01	<dl< td=""><td><dl< td=""><td></td><td></td></dl<></td></dl<>	<dl< td=""><td></td><td></td></dl<>		
Total	2.56E+00	3.55E-02	<dl< td=""><td>8.89E-01</td><td>8.89E-01</td></dl<>	8.89E-01	8.89E-01

Туре	Bin	Length	Width	Aspect ratio
LA = Libby-type amphibole	а			<5
OA = Other amphibole	b	<.5		>= 5
C = Chrysotile	С		>.5	>= 5
	d	>=.5 to < 5	<=.5	>= 5
	е	5 to 10	<=.5	>= 5
	f	>10	<=.5	>= 5

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

	Mineral Class	A_count	B_count	C_count	D_count	E_count	F_count	G_count
I	LA	11	0	17	29	11	4	72
ſ	OA	0	0	0	1	0	0	1
Ī	С	0	0	0	0	0	0	0

Sensitivity	A_conc	B_conc	C_conc	D_conc	E_conc	F_conc
3.55E-02	3.91E-01	<dl< th=""><th>6.04E-01</th><th>1.03E+00</th><th>3.91E-01</th><th>1.42E-01</th></dl<>	6.04E-01	1.03E+00	3.91E-01	1.42E-01
3.55E-02	<dl< th=""><th><dl< th=""><th><dl< th=""><th>3.55E-02</th><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<></th></dl<></th></dl<>	<dl< th=""><th><dl< th=""><th>3.55E-02</th><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<></th></dl<>	<dl< th=""><th>3.55E-02</th><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<>	3.55E-02	<dl< th=""><th><dl< th=""></dl<></th></dl<>	<dl< th=""></dl<>
3.55E-02	<dl< th=""><th><dl< th=""><th><dl< th=""><th><dl< th=""><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<></th></dl<></th></dl<></th></dl<>	<dl< th=""><th><dl< th=""><th><dl< th=""><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<></th></dl<></th></dl<>	<dl< th=""><th><dl< th=""><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<></th></dl<>	<dl< th=""><th><dl< th=""><th><dl< th=""></dl<></th></dl<></th></dl<>	<dl< th=""><th><dl< th=""></dl<></th></dl<>	<dl< th=""></dl<>

G_conc 2.56E+00 3.55E-02

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